Range Safety Policy

Development of NASA Procedural Requirement (NPR) 8715.5, *NASA Range Safety Program*, was completed during 2005. This document describes NASA's range safety policy, roles and responsibilities, requirements, and procedures for protecting the safety of the public, the workforce, and property during range operations associated with flight. The contents of this document define the agency's Range Safety Program. The NASA Administrator signed NPR 8715.5 on 8 July 2005, marking the completion of a two-year, agency-wide team effort that was greatly influenced by the loss of Columbia and the results of the ensuing accident investigation.

The Columbia Accident Investigation Board observed that NASA should "develop and implement a public risk acceptability policy" applicable to the flight of space launch and entry vehicles and the flight of unmanned aircraft. The Board did not identify this policy as something that needed to be in place for Space Shuttle Return-to-Flight. However, NASA pursued the development and implementation of this policy as part of its efforts to "raise the bar" and accomplished this effort for Return-to-Flight. The resulting policy and associated requirements incorporate NASA's approach for managing safety risk to the workforce and public during range flight operations. This policy is documented in Chapter 3 of NPR 8715.5 and represents the most significant accomplishment of the NPR development effort.

The Development Process

Development of a NASA policy requires extensive coordination with the NASA Centers and programs that will be responsible for its implementation. To aid in the development process, the NASA Headquarters Office of Safety and Mission Assurance established a NASA range safety team with members from throughout the agency. The team coordinated with the interagency range safety community and consulted with experts in applying public and workforce risk assessment to the operation of experimental and developmental vehicles. The Columbia Accident Investigation Board's lead investigator for the issue of public risk worked with the team and participated in many of the policy development activities.

As the importance of this effort was recognized, the team was asked to report directly to the NASA Headquarters Operations Council. The team presented several detailed briefings to the Operations Council and ultimately obtained Council approval of the policy. Since this effort was of interest to the public, team members participated in several press conferences and drafted a detailed discussion about the policy and its implementation, included in the publicly available Space Shuttle Return-to-Flight Implementation Plan.

The Risk Management Approach

The NASA range safety risk policy incorporates a widely accepted risk management approach that has been used successfully at United States ranges for addressing risk to the public and the workforce. The policy includes requirements for risk assessment, risk mitigation, and acceptance/disposition of risk to the public and workforce. The policy incorporates performance standards for assessing risk and contains acceptable risk criteria. Finally, the policy requires elevated management review and disposition for any proposed operations where the risk to the public or workforce might increase above the criteria.

Space Shuttle Return-to-Flight

For Space Shuttle Return-to-Flight, NASA range safety personnel worked with the Shuttle Program, the Air Force, and local authorities to implement the new policy, including the development and implementation of risk mitigation strategies for the workforce and visitors at KSC during launch. For Shuttle entry, team members at the Johnson Space Center (JSC) performed groundbreaking work to provide the Shuttle Program with assessments of public risk and to develop new flight rules that balance crew and public safety concerns when selecting among the available entry opportunities and landing sites. These flight rules were in place for the Shuttle's Return-to-Flight.

The inclusive approach taken by NASA during the development and implementation of NPR 8715.5 ensures that the Range Safety Program, which incorporates the new range safety risk policy, fully responds to the related Columbia Accident Investigation Board findings and observations and serves NASA well as it proceeds into the future of space exploration.